

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 March 2001 (15.03.2001)

PCT

(10) International Publication Number
WO 01/18594 A2

(51) International Patent Classification: G02F 1/133

103-702 Sungwon Apt., Sanghyun-Ri, Yongin-City,
449-840 Kyunggi-do (KR).

(21) International Application Number: PCT/US00/24025

(22) International Filing Date:
1 September 2000 (01.09.2000)

(74) Agents: WEBER, Ray et al.; Renner, Kenner, Greive,
Bobak, Taylor & Weber, 1610 First National Tower, Akron,
OH 44308 (US).

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/152,430 3 September 1999 (03.09.1999) US

(81) Designated States (*national*): AE, AL, AM, AT, AU, AZ,
BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK,
DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA,
UG, US, UZ, VN, YU, ZA, ZW.

(71) Applicant (*for all designated States except US*): KENT
STATE UNIVERSITY [US/US]; East Main & Lincoln
Streets, P.O. Box 5190, Research and Graduate Studies,
Kent, OH 44242-0001 (US).

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

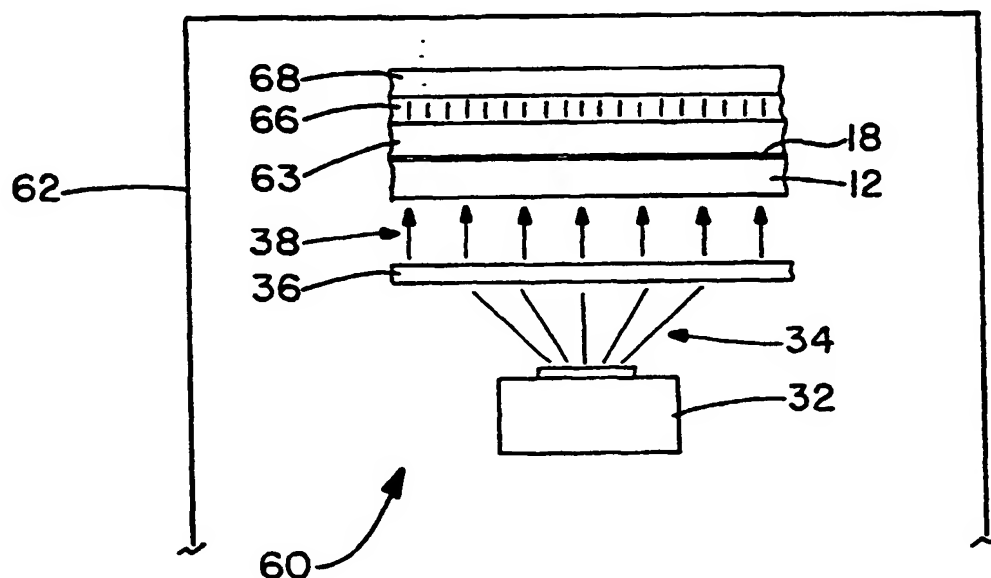
(75) Inventors/Applicants (*for US only*): KUMAR, Satyen-
dra [US/US]; 1981 Crossfield Circle, Kent, OH 44240
(US). CHIEN, Liang-Chy [US/US]; 4510 Forest Hill
Road, Stow, OH 44224 (US). KIM, Jae-Hoon [KR/KR];

Published:

— Without international search report and to be republished
upon receipt of that report.

[Continued on next page]

(54) Title: FABRICATION OF ALIGNED LIQUID CRYSTAL CELL/FILM BY SIMULTANEOUS ALIGNMENT AND PHASE SEPARATION



(57) Abstract: A method for simultaneously fabricating a phase separated organic film and microstructures with liquid crystal having desired alignment is disclosed. The method includes the step of preparing a mixture of liquid crystal material, prepolymer, and polarization-sensitive material. The mixture is disposed on a substrate and a combination of UV or visible light or heat treatment is applied while simultaneously inducing phase separation so as to form a layer or microstructure of appropriately aligned liquid crystal material adjacent the substrate.

WO 01/18594 A2